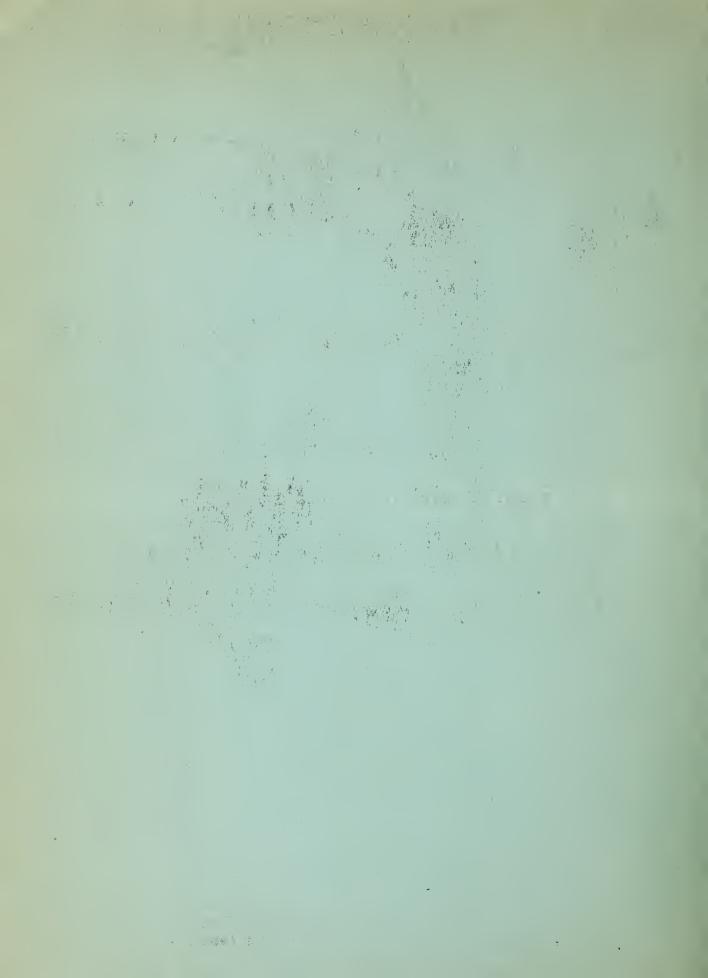
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FEDERAL-STATE COOPERATIVE

SNOW SURVEYS AND IRRIGATION

WATER SUPPLY FORECASTS

FOR

RIO GRANDE BASIN

February 1, 1952

Report Prepared

by

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Division of Irrigation Soil Conservation Service Colorado Experiment Station Fort Collins, Colorado

General Series Paper No. 506 Colorado Agricultural Experiment Station and the second second

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WATER SUPPLY OUTLOOK RIO GRANDE AND CANADIAN DRAINAGE BASINS February 1, 1952

In contrast to the past two years, the water supply outlook for the Rio Grande and its tributaries is very favorable as of February 1, 1952. Snow water content measured on snow courses surrounding San Luis Valley and in extreme northern New Mexico are far in excess of any previous February 1 measurement and in some cases exceed any measurement recorded at the end of the snow accumulation season. A sharp decrease occurs in snow cover to the south in New Mexico where near Santa Fe only normal snow fall has occurred. Soil moisture conditions are reported as fair to poor along the Rio Grande. The flow of the Rio Grande is about normal in San Luis Valley and much above normal in New Mexico.

Snow accumulation is the highest since snow surveys began in 1936 on the Rio Grande watershed in Colorado and extreme northern New Mexico. At medium elevations of 9000 to 10,000 feet the snow water content measurements as of February 1 equal or exceed those of any previous date including April 1. The snow cover extends to the foothills in some districts but there is very little snow on the valley floor. Soil under the snow is wet and unfrozen on most medium elevation courses. Soil moisture conditions in valley areas along the Rio Grande are fair to poor.

The snow cover dimishes rapidly in New Mexico to near Santa Fe and in the Jemez Mountains where normal snow fall has occurred. Snow is well above normal on Canadian River tributaries in the Eagle Nest Lake area but the decrease in snow cover is rapid to the east and south. Reservoir storage along the Rio Grande and Pecos is very low.

Ordinarily, no forecast is made in February 1 reports as to actual flow to be expected from the snow melt. The snow accumulation season on the Rio Grande is about 60 percent complete as of February 1 so wide errors in estimates must be expected. These errors are due to differences in snow accumulation through the remainder of the season. However, due to the unusually high snow cover this year the following estimates are presented for the April-September flow of the Rio Grande at Del Norte and at Otowi Bridge. The minimum, most probable and maximum flows shown below are based on snow accumulation that have actually occurred after February 1 during the past twelve-year period from 1939-1951.

Estimated Flow April - September 1952 (Acre-Feet)

Gaging Station	Minimum	Most Probable	Maximum
Rio Grande at Del Norte	750,000	1,050,000	1,500,000
Rio Grande at Otowi Bridge	1,200,000	1,700,000	2,700,000

The average April-September flow for the past ten-year period is approximately 575,000 acre feet at Del Norte and 850,000 acre-feet at Otowi Bridge.

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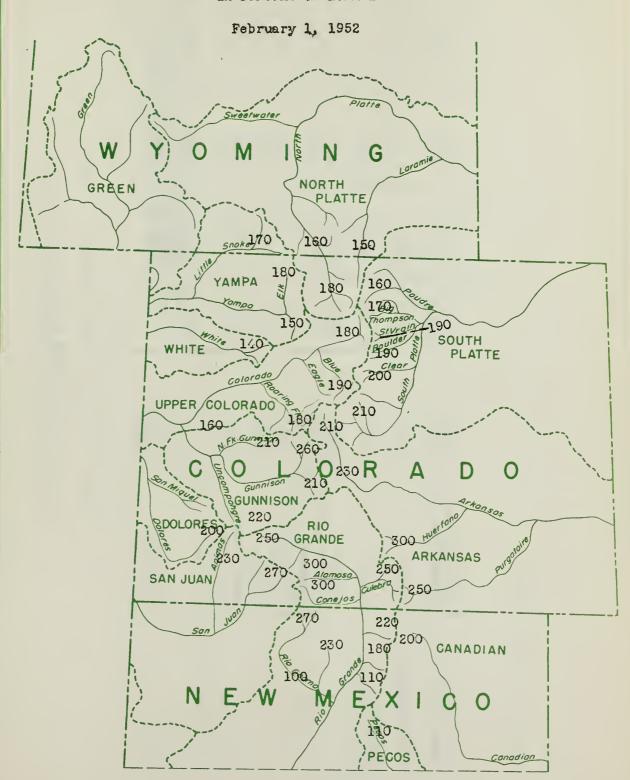
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WATER CONTENT OF SNOW ON THE WATERSHEDS OF
PLATTE, ARKANSAS, UPPER COLORADO AND RIO GRANDE BASINS
BASED ON SNOW SURVEYS MADE APPROXIMATELY FIRST DAY OF MONTH
In Percent of Normal



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SNOW SURVEYS AND IRRIGATION WATER FORECASTS RIO GRANDE BASIN

STATUS OF RESETVOIR STORAGE, February 1, 1952

STREAM	RESERVOIR	USABLE	THC	USANDS OF A	THOUSANDS OF ACRE FEET IN STORAGE	STORAGE	
		1000 A.F.		About Feb. 1	1		10-year Ave.
			1952	1951	1950	1949	1942-1951
RTO GRANDE	Rio Grande	١,٢.٠	ν V	8	1 00	7 7 1	15.0
	Santa Maria	15.0	0	2,2	22.9	17.1	ر د ر ا
	Sanchez	103.0	e e	2.8	12.3	7.8	13.4
	Terrace	17.7	1.9	1,3	3.7	1,5	3,1
	Continental	26.7	2.5	2.8	17.3	5.5	7.6
	Platoro	0.09					
	Elephant Butte	2273.7	37.4	309.8	9.709	1,96.3	963.9
	Caballo	365.0	144.5	117.9	270.2	130.5	227.2
CHAMA RIVER	El Vado	226.0	0.0	31.0	163.8	147.0	73.8
CANADIAN RIVER	Conchas	0-009	118.6	195.1	725.1	307.0	37/1.3
)		1	2	(*†*/
PECOS RIVER	Alamogordo	148.0	22.0	103.0	104.0	25.0	9*19
	McMillan-Avalon	15.0	2,5	7.6	25.3	0.0	15.3
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*Some for shorter periods.

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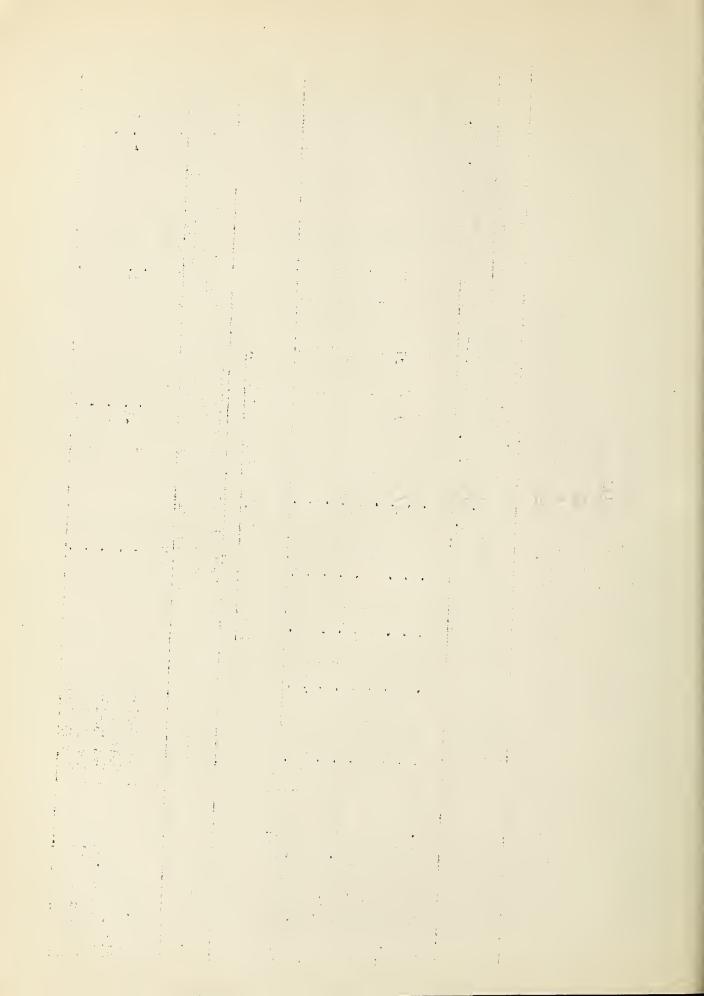
SNO. SURVEYS AND IRRIGATION TATER FORECASTS for RIO GRANDE BASIN February 1, 1952

SUMMARY OF FEBRUARY 1 SNOW SURVEYS AND COMPARISON OF DATA WITH THAT OF PREVIOUS YEARS BY WATERSHEDS

	Snow					No. of	Snow	1952 Wa	ter Content
WATERSHEDS	Depth	Snow W	ater Co	ntent	Water Content in Inches	courses	Density	in perc	in percent of
	1952				15 yr.*	in	1952		
	Inches	1952	1951	1950 Avg.	Avg.	Avg.	Percent	1951	15 yr. Avg.*
Rio Grande (Colo.)	1,9.3	15.4	7.0	6.6	5.4	80	31	388	284
Upper Rio Grande	77.3.	25.0	7.2	14.1	9.4	2	32	348	267
Alamosa River	17.7	15.0	1.9	3.9	3.0	ч	31	715	384
Conejos River	54.5	17.7	2.6	7.4	0.0	٦	32	089	354
Culebra River	50.0	15.1	3.1	6.8	6.2	H	30	1,78	244
Rio Grande (N.M.)	26.8	2.5	1.3	4.3	4.4	17	35	730	216
Chama River	42.0	14.2	2.0	4.8	5.4	Υ	34	712	264
Pecos River	10.6	۳. ۳.	0.3	2.4	3.0	7	35	1100	110
Canadian River	124.9	7.8	1.8	3.6	1,1	77	31	434	190
*Some for shorter periods	iods								

PRECIPITATION DATA

			:		
		Precipitation	Departure		Departure
WATERSHED	STATE	October 1 to	from	Precipitation	from
		JJanuary 31	Normal	January	Normal
		Inches	Inches	Inches	Inches
Canadian	New Mexico	3. LT	-2.12	0.54	+0,16
Rio Grande	Colorado	4.05	+1.56	1.42	+0.93
Rio Grande (N)	New Mexico	6.21	#J.74	1.89	+0.77
Rio Grande (S)	New Mexico	7.35	-1.21	0.13	-0.33
Pecos	New Mexico	2.50	-1.46	0.40	-0.12



RIO GRANDE DRAINAGE SNOW SURVEYS February 1, 1952

				1	cornar	redinary 1, 1520	20						
		J.	Location					גט	Snow Cover Measurements	r Measur	ements		
Drainage Basin	No.		1			Date	Snow	Water (Water Content (Inches)	Inches)	Past	Past Record	
and	and	Sec.	Twp.	Range 1	Elev.	of	Depth				Yrs. of	Yrs. of Av. Water Con-	
Snow Course	State					Survey	(Inches)	1952	1951	1950	Rec.	tent (Inches)	
RIO GRANDE IN COLORADO)RADO												
Wolf Creek Pass	26 Colo.	4	37N	2E	10000	1/31	116.5	12.0	13.1	24.0	12	15.5	
Upper Rio Grande	27 "	ដ	NOT	一百	9350		1	1	3.4	6.4	H	8 1	
Silver Lakes	n 27	15	36N	跃	9600	٠.	47.7	15.0	1.9	2.6	12	3.9	
River Springs	16 n	25	33N	A	9300		54.5	17.7	2.6	7.4	Ħ	5.0	
Laveta Pass #2	42	22	288	MO2	9300	1/28	16.6	15.8	3.5	3.4	12	8*17	
Cumbres Pass #2	77 m	17	32N	弘	10000				9.7	12.0	12	13,1	
Santa Maria	2 80 2	ω	31N	M 2	9700		38.1	7.9	1.3	4.2	13	3.4	
Culebra	82 "		37.2N	105.2	10000	1/31	50.0	15.1	3.1	8.9	12	6.2	
Ft. Garland	# 48	H	N62	128	8200		19.0	4,1	0.0	0.0	Ħ	1.6	
Cochetopa Pass	126 "	12	15	띘	10000	2/7	21.9	5.6	2.8	1.5	8	3.1	
Howardville	151 "	15	NIT	E	9800			17.5	7.9		_		
Wolf Creek Summit 155	155 "	9	37N	SE	00111	1/31	117.0	10°1	12.1		~		
17		A	Average	for dra	inage		19.3	15.4	0-1	9.9		2.4	
UPPER RID GRANDE)										۰
Wolf Creek Pass	26 Colo.	-3	37N	æ	10000	1/31	116.5	42.0	13.1	24.0	12	15.5	
Upper Rio Grande	27 "	13	Not	吾	9350		1	1	3.4	7.9	H	∞ . - 1	
Santa Maria	80 "	က	NI	SE	9700	1/30	38.1	7.9	1.3	4.2	13	3.4	
		Ø	Average	for dra	inage		77.3	25.0	7.2	14.1		ካ * 6	

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RIO GRANDE DRAINAGE SNOW SURVEYS February 1, 1952

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Dramage basin and	No	Ü			ŗ	te	Snow	Water	water Content(Inches	(nches)	Past	Past Record	
Snow Course	State))	•d _M •	nange	ET ev.	Survey	Depth (Tuches)	1052	ראסר	1000	1	of Av. dater Con-	
ALAMOSA RIVER								1//-	17/1	1720	rec.	tent (Inches)	
Silver Lakes	47 00100 15	15	36N	SE.	0096	1/28	47.7	15.0	1.9	5.6	12	3.9	
CONEJOS RIVER	(,		,							
Cumbres Pass #2	49 Colo.	25	33N 32N	0 死 死	9300	1/31	54.5	17.7	2.6	7.4	11	5.0	
			Average	ť	ainage		54.5	17.7	2.6	7.7		5.0	
CULEBRA RIVER							•						
Culbbra	82 Colo.		37.2N	105.2W 10000 1/31	10000	1/31	50.0	15.1	В.1	6.8	12	6.2	
				RIO GRANI	DE IN N	GRANDE IN NEW MEXTCO	ç						
CHAMA AIVER							2						
Cumbres Pass #2	77 Colo. 17	77	32N	<u>元</u>	10000	00/ 1	{	1	7.6	12.0		13.1	
Chama Divide	17 " 17	9	36.9N	106,77	7750	2/4	51.9	16.5	0.0	6.7	H,	6.3	
Chamita	18 "		36.9N	106.77	8500	2/4	, 0 , 0 , 0	- 6.	1 to	า ก่~	77	2,7	
Bateman	53	᠕	26N	到	9300	1/29	27.5	15.4	, d	2.6	2 ~	v, r,	
PECOS RIVER			Average	Average for drainage	inage		45.0	14.2	2.0	4.8	1	7	
Aspen Grove*	4 N. 75.	8	28N	15E	9500	2/1	10,5	3.1	c	, ,	<u>ر</u> ـ	(
Panchuela	20 #	25	21th	16E		2/1	8	יעל		30	J :	٧,٠	
big Tesuque*	12 "	23	22N	13E	0006	2/1	19.0	12)	J 5	٠, ٠, ٠, ٠, ٠, ٠, ٠, ٠, ٠, ٠, ٠, ٠, ٠, ٠	
Gallinas	25 #	25	22N			1/27	2.8	1,2	0.0	i c	2 -	- t	
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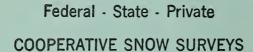
RIO GRANDE DRAINAGE SNOW SURVEYS
February 1, 1952

	Measurements	Past Record	Av. Water Con-	tent (Inches)		1.9	1,8	3.9	3.4	4.3	6.3	7.0	2.0	9.9	3.1	7•7	2.5	2.6	5.0			7.47		3.4	2.2	\^ \ 2\	90	T • ††
			Yr. of	Rec.																								
	JM Cover	Inches)		1950		5.7	٠ ٠	3.6	3.4	2.7	6.7	۳. س•	7.6	5.1	2.0	7.7	2.3	4.9	7.6	1	1	4.3		3.4	0,0	. · · · ·	12	0.5
	Snow	Content (1951		少。0	0.1	0.0	0.0	2,3	0.2	2.4	۵. ۲.	1. 1	0.9	0.2	0.5	0.3	2.4	0.0	*	1.3		0.0	0.2	۲۰۶	71-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	D. 0
		Water C		1952	50	12.8-	4°°	3.4	7.1	7.5	16.5	7.7	18.3	12.2	3.5	5.2	2,5	5.9	15.4		5.2	9.5		7.1	7,7	7.5	12.2	0.)
1, 1952		Snow	Depth	(Inches) 1952	NEW MEXIC	26.1	22.2	10.5	23.9	20.4	51.9	23.4	50.8	40.2	9.8	19.0	ر م م	19.5	51.5		20.3	26.8		23.9	15.1	20.4	200	24.9
rebruary 1, 1952		Date	of	Survey	GRANDE IN	1/31	1/29	2/1	1/30	1/30	1/30	2/4	12/4	1/31	2/1	1/31	2	1/31	<u> </u>		12/1	age	CANADIAN	7	Ξ,	1/30	17/31	age
۲ų			Elev.		RIO GR	9500	0006	9100	9500	9000	9700	7750	8500	10100	8300	10000	8350	10400	9300	10000	1 8900 2/1	Drainage		9500	9200	0006	10100	Urainage
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			Sec			29	10	12	∞	23	16			22	27	17	80	80	20		18			ω 1	25	23	25	
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		Drainage Basin	and	Snow Course		Red River	Taos Canyon	Aspen Grove	Hematite Park*	Tres Ritos	Pay Role	Chama Divide	Chamita	Cordova	Panchuela #2	Big Tesuque	Elk Cabin	Rio En Medio	Bateman	Costilla	Fenton Hill			Hematite Park	Ocate Mesa	Tres Ritos*	Cordova*	

*On adjacent drainage

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Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"WATER IS THE WEST'S GREATEST RESOURCE"